UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,684	01/12/2006	Christophe Bernard	35203-002US1	8584

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EXAMINER
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ART UNIT	PAPER NUMBER
2621	

NOTIFICATION DATE	DELIVERY MODE
03/31/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *12 January 2006*.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1,7,8,11,12,17,26,38,44,49,72,73,77 and 78* is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1,7,8,12,17,38,44,49,72,73,77 and 78* is/are rejected.
7) ☒ Claim(s) *11and 26* is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *12 January 2006* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All   b) ☐ Some *   c) ☐ None of:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____.
   3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   This application is responsive to application number (10/539684) filed on January

12, 2006. Claims 1,7, 8, 11, 12, 17, 26, 38, 44, 49, 72, 73, 77, and 78 are pending and

have been examined.

Information Disclosure Statement

2.   Acknowledgement is made of applicant's information disclosure statement.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating
            obviousness or nonobviousness.

5.   Claims 1, 7, 8, 12, 17, 38, 44, 49, 72-73, and 77-78 rejected under 35 U.S.C.

103(a) as being unpatentable over Le Pennec et al (US 6,836,569, hereafter Le

Pennec) in view of Washizawa (US 5,917,943).

As per **claim 1**, Le Pennec discloses a method of processing n-dimensional

digital signals, n being an integer at least equal to 1, comprising the steps of:

(a) providing an n-dimensional warped signal including n-dimensional warped

coefficients and n-dimensional signal warping grids (column 7 lines 18 – 24); and (b)

computing warped wavelet packet coefficients and wavelet packet warping grids by

applying an n-dimensional warped wavelet packet transform to said warped signal

(column 7 lines 28 – 38).

However, Le Pennec does not explicitly teach with a binary tree where each

node performs a one-dimensional warped subband processing along a respective

dimension d, with $1 < d < n$.

In the same field of endeavor, Washizawa teaches with a binary tree where each

node performs a one-dimensional warped subband processing along a respective

dimension d, with $1 < d < n$ (column 7 lines 9 -21).

Therefore, it would have been obvious for one having skill in the art at the time of

the invention to modify the invention of Le Pennec in view of . Binary trees are well-

known to the invention of wavelet subband coding.

As per **claim 7**, Le Pennec discloses a signal processing method according to claim 1, wherein the step of providing the n-dimensional warped signal comprises: (a) receiving an n-dimensional digital input signal; and (b) computing said n-dimensional warped signal from said n-dimensional digital input signal (column 7 lines 18 – 22).

As per **claim 8**, Le Pennec discloses a signal processing method according to claim 7, wherein said signal warping grids are computed from a warping geometry defined by region parameters specifying a partition of a signal support into a plurality of regions and deformation parameters specifying geometrical deformation functions respectively associated with said regions, whereby the geometrical deformation function associated with one of the regions provides positions of sampling points within said one of the regions (column 7 lines60 – 65 and column 8 lines 26 – column 9 line 36).

As per **claim 12**, Le Pennec discloses a signal processing method according to claim 8, further comprising the step of applying a bandeletisation to said warped wavelet packet coefficients and wavelet packet warping grids, wherein said bandeletisation comprises computing bandelet coefficients by applying invertible one-dimensional decorrelation operators to said warped wavelet packet coefficients along selected directions of said wavelet packet warping grids (column 7 lines 60 – 66).

As per **claim 17**, Le Pennec discloses a signal processing method according to claim 12, further comprising the steps of:

(a) quantizing said bandelet coefficients to produce quantized bandelet coefficients (column 8 lines 2 - 5); and

(b) encoding said quantized bandelet coefficients and said region and deformation parameters into a multiplexed data stream suitable for storage in a storage medium or for transmission over a transmission medium, said multiplexed data stream being a compressed representation of an n-dimensional input signal from which the n-dimensional warped signal is computed (column 7 lines 64 – 67 and column 8 lines 2 – 5)

As per **claim 38**, Le Pennec discloses a method of processing n-dimensional digital signals, n being an integer at least equal to 1, comprising the steps of: (a) providing warped wavelet packet coefficients and wavelet packet warping grids; and (b) computing a warped signal including n-dimensional warped coefficients and n-dimensional signal warping grids based on said warped wavelet packet coefficients and wavelet packet warping grids, with a binary tree where each node performs a one-dimensional inverse warped subband processing along a particular dimension d, with 1 < d < n; and (c) applying an inverse warping operation to said warped signal to produce an output signal (column 7 lines 18 – 24 and column 8 lines 13 – 20).

As per **claim 44**, Le Pennec discloses a signal processing method according to claim 38, wherein the step of providing the warped wavelet packet coefficients and wavelet packet warping grids comprises: (a) obtaining bandelet coefficients (column 8 lines 11 – 13); (b) obtaining parameters defining a warping geometry (column 7 lines 60 – 63); (c) computing said wavelet packet warping grids from said warping geometry; and (d) computing said warped wavelet packet coefficients by applying an inverse bandeletisation to said bandelet coefficients, wherein said inverse bandeletisation

comprises computing warped wavelet packet coefficients by applying inverse one-dimensional decorrelation operators to said bandelet coefficients, along selected directions of said wavelet packet warping grids (column 7 lines 55 – 67 and column 8 lines 13 - 20).

Regarding **claim 49**, arguments analogous to those presented for claims 17 and 44 are applicable for claim 49.

Regarding **claim 72**, arguments analogous to those presented for claim 17 are applicable for claim 72.

Regarding **claim 73**, arguments analogous to those presented for claim 17 and 44 are applicable for claim 73.

Regarding **claim 77**, arguments analogous to those presented for claim 17 are applicable for claim 77.

Regarding **claim 78**, arguments analogous to those presented for claims 17 and 44 are applicable for claim 78.

Allowable Subject Matter

6.   Claims 11 and 26 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621

/Chikaodili Anyikire/
Patent Examiner AU 2621